

# 2 Pole RCBO Instructions

## Safety Measures

The product should be operated in accordance with the valid requirements of electrical safety regulations, as well as other reference documentation regulating the operation of electrical equipment in force in the territory of sale

All installation and preventive maintenance works should be carried out with the voltage disconnected.

According to the electric shock protection method, RCBO's correspond to the 0 class according to IEC 61140 and should be installed in the distribution equipment having protection class at least I according to IEC 61140.

Minimum distances from RCBO to metal parts of distribution board products should meet IEC 61009-1.

## Installation Rules

Installation, connection and commissioning of the RCBO should be carried out by a licensed electrician in accordance with AS/NZS 3000.

RCBO is installed on the mounting rail with width of 35mm (DIN rail) in electric switchboards with degree of protection not lower than IP20 according to IEC 60529.

RCBO has an indicator of the switching position of the contacts. A circuit breaker handle and a colour indicator are used as a pointer. The switching position of the RCBO is indicated by signs and the state of the indicator colours.

Disconnected position - the indicator is green;

Switched on position (I) - red indicator

## ATTENTION

If the neutral conductor is incorrectly connected to the 1P+N RCBO, its instantaneous trip occurs - over voltage protection is activated.

After installation and checking its correctness, apply mains voltage to the electrical installation and turn on the RCBO by moving the operating handle to the "I" position. Press the "TEST" button. The instantaneous trip of the RCBO (disconnection of the circuit protected by the device), moving the handle to the "O" position - "OFF;" green color indicator means that the RCBO is functioning properly.

If after switching on the RCBO, immediately or after some time, it switches off, it is necessary to determine the type of fault in the electrical installation according to the following procedure:

a) Reset the RCBO with the operating handle. If RCBO is reset, it means that there was earth leakage current, caused by unstable or short-term insulation damage in the electrical installation. Check the serviceability of the RCBO by pressing the "TEST" button.

b) If RCBO is not reset, it means that there is a defect of insulation of any electrical wiring, mounting conductors of the switchboard, or the RCBO is defective.

Disconnect all electric cables and reset RCBO. If it is reset, it indicates the presence of an electric cable or equipment with damaged insulation. The fault is detected by connecting the electric cable in series until the RCBO trips. The damaged electric cable should be disconnected. Check RCBO serviceability by pressing the "TEST" button.

If RCBO continues to trip it is necessary to call a qualified specialist to determine the nature of the damage of the electrical installation or to identify the fault of RCBO.

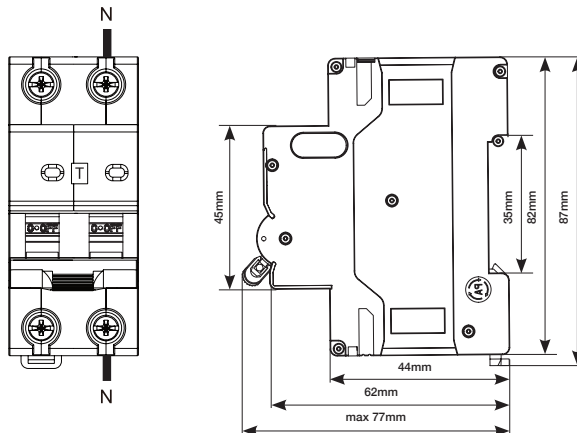
## ATTENTION

It is necessary to check the serviceability of the RCBO once a quarter. The test is carried out by pressing the "TEST" button. Immediate tripping of RCBO and disconnection of the protected electrical installation means that it operates properly.

It is necessary to re-tighten the screw terminals once every 6 months, the pressure of which weakens over time due to cyclic changes in ambient temperature and metal flow of the clamped conductors.

## The RCBO Provides

- Protection of people from electric shock in case direct contact with live parts of electrical installation;
- Protection of people in case of indirect contact with accessible live parts of electrical installation in case of insulation damage;
- Protection against fires resulting from leakage of differential (residual) current to earth in case of insulation damage of lives parts;
- Protection against over currents (overload and short circuit) occurring in electrical installations of buildings.
- The RCBO's features a neutral block moulding to help prevent incorrect installation with busbars. Care must be taken to ensure the bar is installed correctly with the insulation block under the terminal screw.



Parameter denomination		Value	
Number of poles		1P+N	
Rated operating voltage Ue, V		230	
Rated mains frequency, Hz		50	
Rated insulation voltage, Ui, V		230	
Rated Current in A		6; 10; 16; 20; 25; 32; 40; 50; 63	
Rated impulse withstand voltage Uimp, V		4	
Rated residual operating current IΔn, A		0,5- IΔn	
Minimum value of rated residual short-circuit making and braking capacity IΔm, A		2000	
Rated maximum switching capacity Icn, A		4500	
Over-current protection		Yes (in phase poles only)	
Over-voltage protection	operating voltage, V	265±10	
	operating time, ms	150÷350	
Type of operating characteristic according to operating conditions in the presence of a DC component		A	
Over-current tripping characteristic		C	
Time-current operating characteristic at calibration reference temperature plus 30°C	Tripping time ranges at the specified currents		1,13 In: tcp/mean≥ 1 hour - without tripping;
			1,45 In: tcp/mean 1 hour - tripping;
			2,55 In: 1c/s<tcp/mean <60c/s (at IN 32 ≤ A) - tripping
	Tripping current ranges depending on the type of protective characteristic	C	5In
		C	10In
Cross-sections of conductors to be connected, mm²		1÷25	
Material of conductors to be connected		Coper, Aluminum	
Maximum withstanding tightening torque of the output screw when using a screwdriver, NxM°		3	
Recommended tightening torque of output screw when using a screwdriver, NxM°		2	
Mechanical wear resistance, On-Off cycles, minimum		4000	
Electrical wear resistance, On-Off cycles, minimum		4000	
Sinusoidal vibration	Frequency range, Hz		
	maximum acceleration amplitude, m-s-2 (g)	5 (0,5)	
Rated Duty		Continuous	

Type and parameters of RCBO			Limit values of operating time and non-operating time, s, for RCBO type under conditions of alternating residual currents (root-mean-square values)						
Type	In, A	IΔn, A	IΔn	2IΔn	5Δn	5Δn 0.25 A	5-200, 500, A	IΔt	operating and non-operating time
Common	Any Value	less than 0,03	0,3	0,15	-	0,04	0,04	0,04	maximum operating time
		0,03	0,03	0,15	-	0,04	0,04	0,04	
		above 0.03	0,03	0,15	0,04	-	0,04	0,04	

Maximum value of operating time at the alternation residual current (root mean square value) of RCBO of A type.										
Type and parameters of RCBO			Maximum value of operating time, s, for RCBO of A type at the alternation residual currents (root mean square value).							
Type	In, A	IΔn, A	1,4IΔn	2IΔn	2,8IΔn	4IΔn	7IΔn	0,35A	0,5A	350A*
Common	Any Value	less than 0,030	-	0,3	-	0,15	-	-	0,04	0,04
		0,03	0,3	-	0,15	-	-	0,04	-	0,04
		above 0,03	0,03	-	0,15	-	0,04	-	-	0,04
This value is limited to the lower limit of the instantaneous tripping current range according to type C.										

Tripping current ranges for A-type RCBO		
Current delay angle α	Tripping current	
	Lower Limit	Upper Limit
0	0,35IΔn	1,4IΔn (IΔn > 0,01 A)
90	0,25IΔn	2IΔn (IΔn ≤ 0,01 A)
135	0,11IΔn	

Operating time-current characteristics of circuit breaker over-current operation					
Type	Test current	Initial state	Tripping or non-tripping time	Required result	Note
C	1,13 In	Cold	t ≤ 1h (at In ≤ 63A)	without tripping	-
C	1,45 In	Immediately after testing with current of 1,13 In	t ≤ 1h (at In ≤ 63A)	tripping	continuous current build-up for 5s
C	2,55 In	Cold	1 c/s<t <60c/s (at In ≤ 32A) 1 c<t < 120 c (at In < 32A)	tripping	-
C	5 In	Cold	t ≤ 0,1 c/s	without tripping	Current is generated by closing the auxiliary switch
C	10 In	Cold	t< 0,1 c/s	tripping	